CONTECH®
ENGINEERED SOLUTIONS
*A QUIKRETE® COMPANY*

# Water Polisher Operation & Maintenance Manual

# WATER POLISHER
# OPERATION & MAINTENANCE MANUAL

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## OVERVIEW

The Water Polisher (WP) is a reactive media filter system designed and marketed by Contech Engineered Solutions, LLC (Contech). The WP is a multi-stage up-flow filtration system containing proprietary media optimized to remove high levels of TSS, hydrocarbons, particulate and dissolved metals, and particulate and dissolved nutrients found in contaminated stormwater.

As with all stormwater BMPs, inspection and maintenance on the Water Polisher is necessary. Stormwater regulations require that all BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. Without appropriate maintenance, a BMP can exceed its storage capacity, which can negatively affect its continued performance in removing and retaining captured pollutants.

## WARNING

Confined space entry may be required. Contractor to obtain all equipment and training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to always proceed safely.

## SAFETY NOTICE AND PERSONAL SAFETY EQUIPMENT

Job site safety is a topic and a practice addressed comprehensively by others. The inclusions here are merely reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s), and Service Provider(s). OSHA and Canadian OSH, Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Service Provider's responsibility and outside the scope of Contech Engineered Solutions.

Safety Boots

Gloves

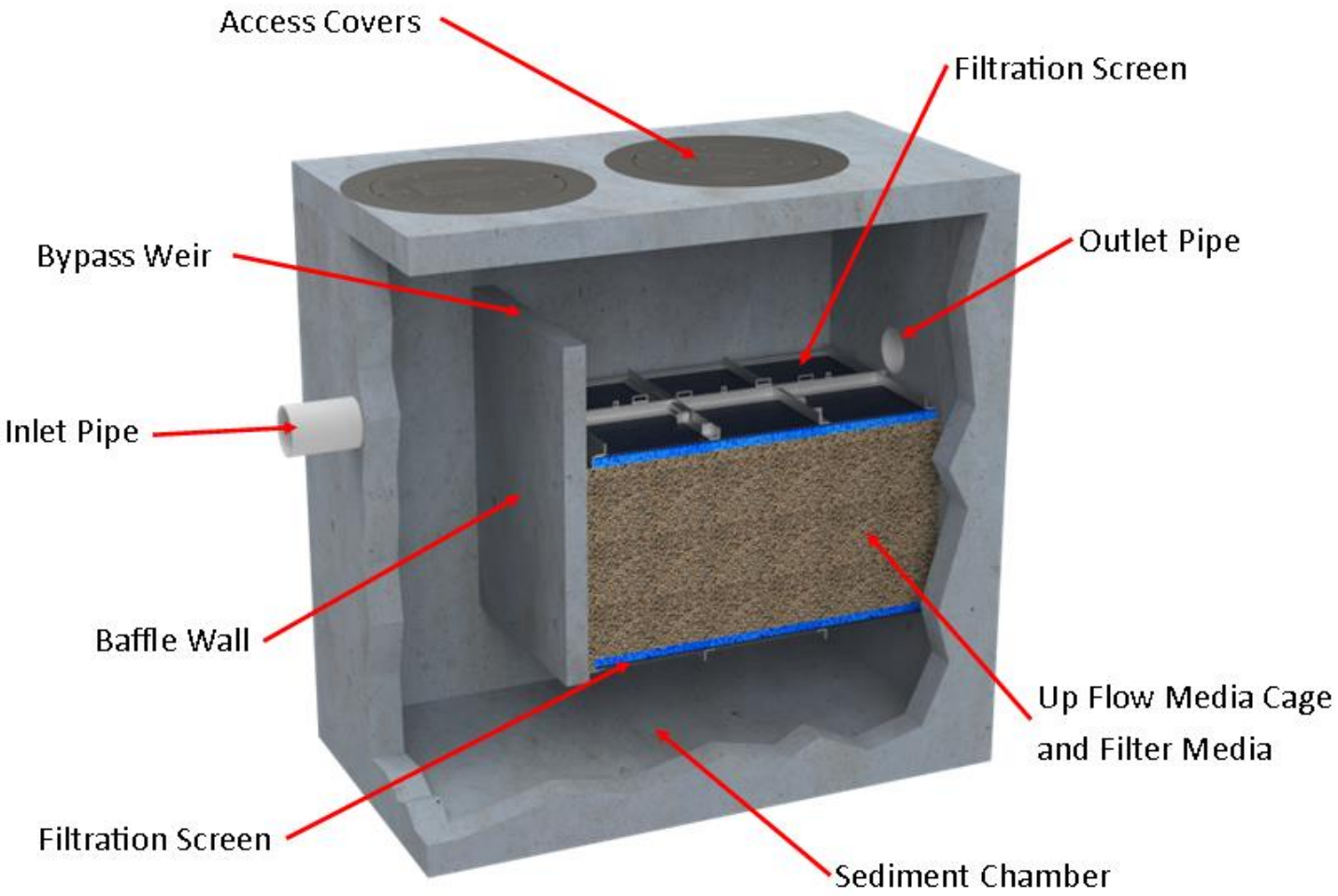
Hard Hat

Eye Protection

Maintenance and Protection of Traffic Plan

## WATER POLISHER COMPONENTS LIST

The Water Polisher system comes in single-cage or multiple-cage configurations. The components per the shop drawings (plans) typically include:



## INSPECTION SUMMARY & EQUIPMENT LIST

The core to any successful stormwater BMP maintenance program is routine inspections. The inspection steps required on the Water Polisher are quick and easy. It is recommended that inspections be performed multiple times during the first year to assess the site-specific loading conditions. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided.

The following is a list of equipment required to allow for simple and effective inspection of the Water Polisher:

Contech Inspection and Maintenance Report

Flashlight

Access Cover Hook

Tape Measure

## INSPECTION AND MAINTENANCE NOTES

1. Following maintenance and/or inspection, it is recommended that the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics, and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into the Water Polisher vault may require confined space training based on state and local regulations. It is generally not required for routine inspections but is required for replacement of media during maintenance.

## INSPECTION PROCESS

1. Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other requested data (see inspection form).
2. Observe the inside of the system through the access covers. If minimal light is available and vision into the unit is impaired, utilize a flashlight to see inside the system.
3. Look for any out of the ordinary obstructions in the inlet pipe, pre-treatment chamber, filtration chamber, or outlet pipe. Write down any observations on the inspection form.
4. Through observation and/or digital photographs estimate the quantity of floatable debris accumulated in the pre-treatment chamber and/or filter chamber. Record this information on the inspection form. Next, utilizing a tape measure or measuring stick, estimate the amount of sediment accumulated in the pre-treatment and filter chambers. Record this depth on the inspection form. Through visual observation, inspect the condition of the filter chamber. Look for excessive build-up of sediments on the surface and any build-up on the top of the screen. Record this information on the inspection form.
5. Finalize the inspection report for analysis by the maintenance manager to determine if maintenance is required. The next section provides details on when maintenance is required based upon the findings from the inspection report.

## MAINTENANCE INDICATORS

Based upon the observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components.
- Obstructions in the system or its inlet/outlet pipe.
- Excessive accumulation of floatable trash and/or debris in the pre-treatment chamber in which the length and width of the chamber is fully impacted. Maintenance is required if more than 50% of the water surface area in the pre-treatment chamber is filled with floating trash and debris.
- Excessive accumulation of sediment in the sedimentation chamber, such as when the chamber is half-full. The Water Polisher has a sump chamber depth of 18" from floor to bottom of the filtration screen. It is recommended that sediment in the sump is not allowed to accumulate more than 9" of the floor in any spot. Generally, the sediment level will be higher in the pre-treatment chamber under the inlet pipe.
- Substantial build-up of sediments on the top of the filtration chamber screen. This indicates the substantial amounts of internal bypass is taking place and the sump chamber is either full and/or the filtration media is clogged and needs to be backwashed or replaced.

## MAINTENANCE SUMMARY & EQUIPMENT LIST

It is recommended that maintenance occurs at least two days after the most recent rain event to allow debris and sediments to dry out. Maintaining the system while flows are still entering it will increase the time and complexity required for maintenance.

Cleaning of the screens and sediment chambers can be performed from the finished surface without entry into the vault utilizing a vacuum truck on most installations. All necessary pre-maintenance steps must be carried out before maintenance occurs. Once traffic control has been set up per local and state regulations and the access cover has been safely removed, the maintenance process can begin. Depth and configuration of the installation or access covers may create conditions which would require confined space entry for some, or all, of the maintenance procedures. All confined space requirements must be strictly followed before entry into the system. In addition, the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other requested data (see maintenance form).
- Set up all appropriate safety and maintenance equipment.
- Ensure traffic control is set up and properly positioned.
- Prepared pre-checks (OSHA, safety, confined space entry) are performed.

The following is a list of equipment to allow for simple and effective maintenance of the Water Polisher. It is recommended that a vacuum truck be utilized to minimize the time required to maintain the Water Polisher. The vacuum truck should have a pressure washer with a water tank of at least 250 gallons if backwashing is required.

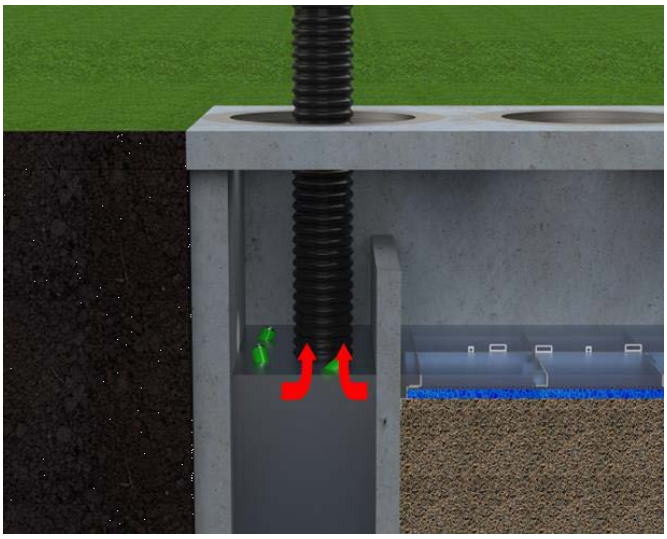
Contech Inspection and Maintenance Report

Flashlight

Access Cover Hook

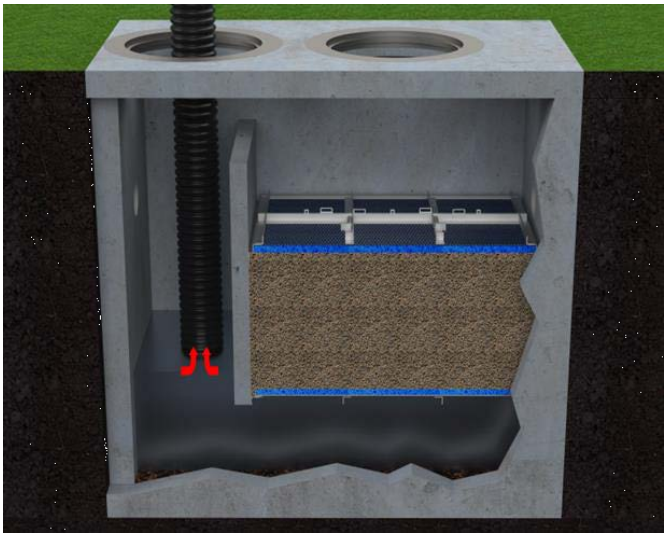
Vacuum Assisted Truck with Pressure Washer

# MAINTENANCE INSTRUCTIONS



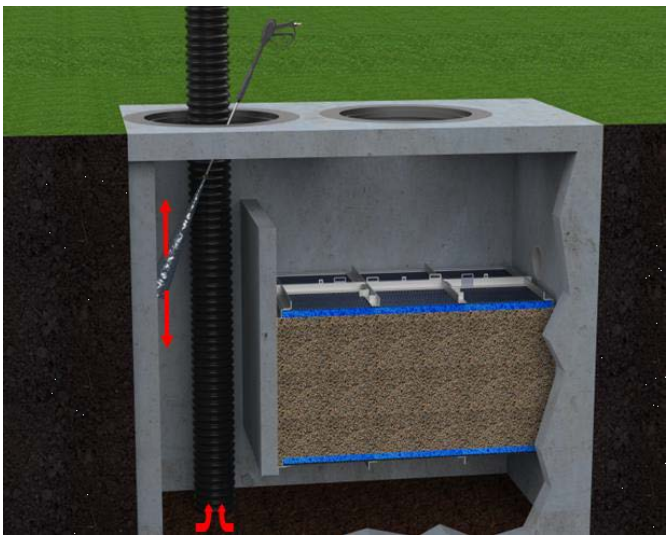
## 1. VACUUM OUT WATER DEBRIS

Using a vacuum truck, position the hose over the opened access cover and lower it into the center of the pre-treatment chamber. Remove floating debris, trash, and hydrocarbons from the chamber.



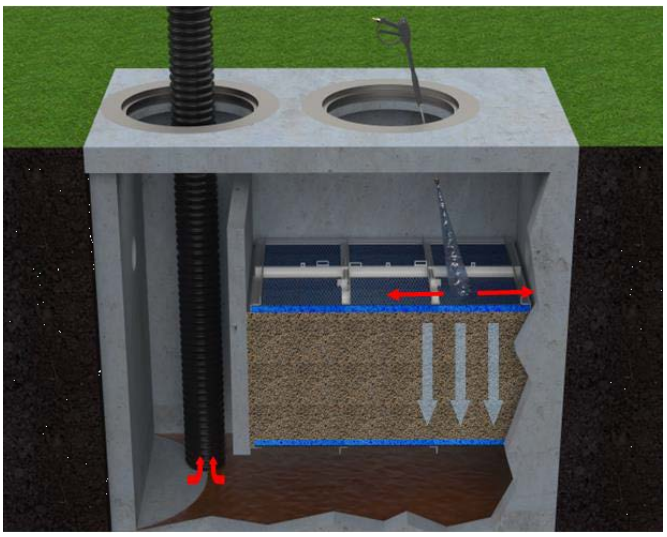
## 2. REMOVE STANDING WATER

Vacuum out the standing water in the system until the sediment in the bottom of the chambers becomes visible.



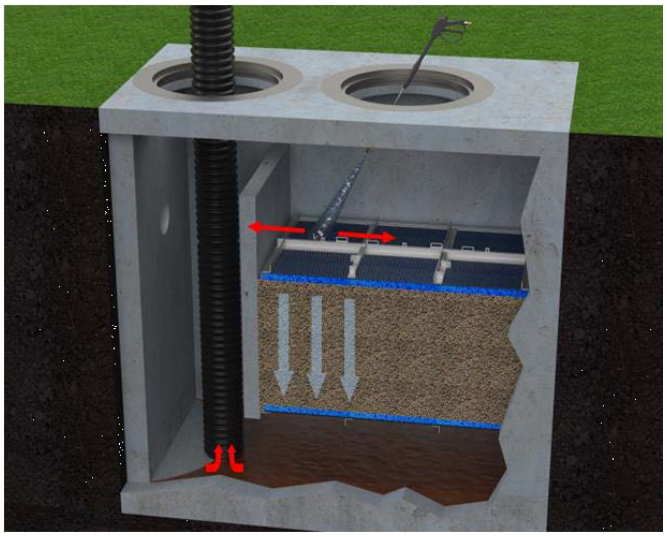
## 3. VACUUM OUT SEDIMENTS

Use the vacuum hose with the assistance of the pressure washer to start loosening and removing the sediment accumulated in the bottom of the chamber. Most sediment will be directly below in the area between the inlet pipe and baffle wall. While cleaning, also spray down all sidewalls to ensure all accumulated pollutants are removed from the system.



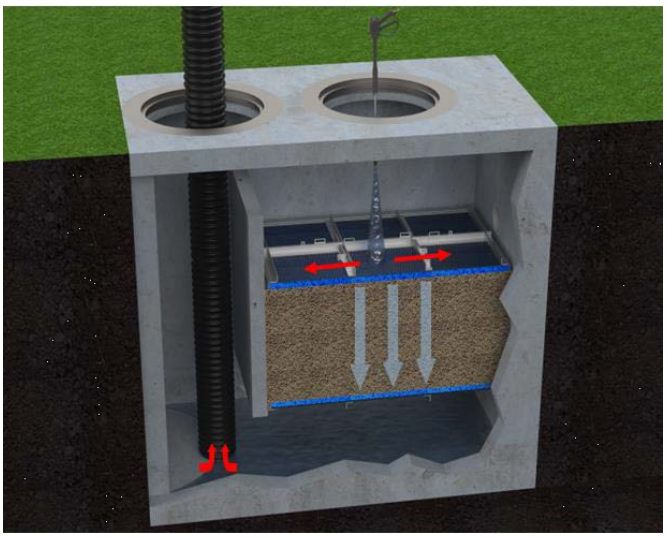
## 4. BACKFLUSH FILTER MEDIA

Using a pressure washer, backflush the filter media. Either from ground level or standing on top of the cage (confined space entry required), take the pressure washer wand and start on one end and move the wand slowly back and forth from one side to the other side. Continue to go back and forth over the same media area at least 3 to 4 times.



## 5. CONTINUE TO BACKFLUSH FILTER MEDIA

Continue this same motion from one end of the cage to the other. During this process, the vacuum hose should be placed down on the floor of the separation chamber as shown in the illustration to the left. Observe the color and clarity of the water. Repeat the backflush of the filter media starting from step four at least twice, or more as needed, to dislodge and remove built up sediment within the filter media.

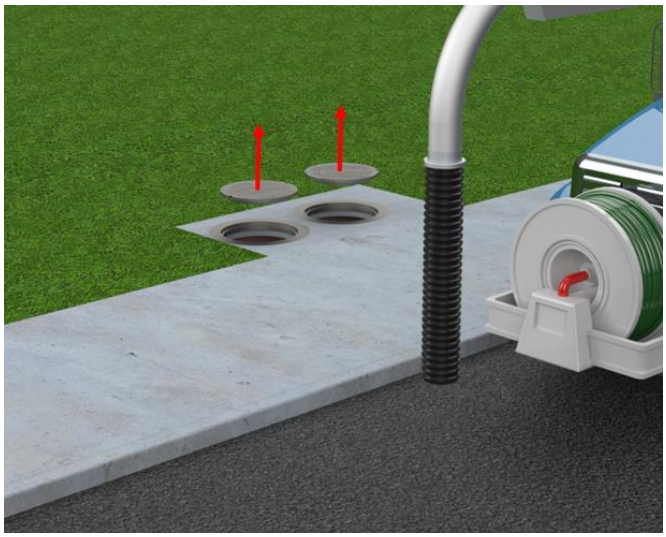


## 6. FINISH BACKFLUSHING FILTER MEDIA

Backflushing is complete when the color and clarity of the water flowing toward the vacuum hose becomes clean and clear. Once filter media is fully backwashed, this portion of the maintenance has been completed.

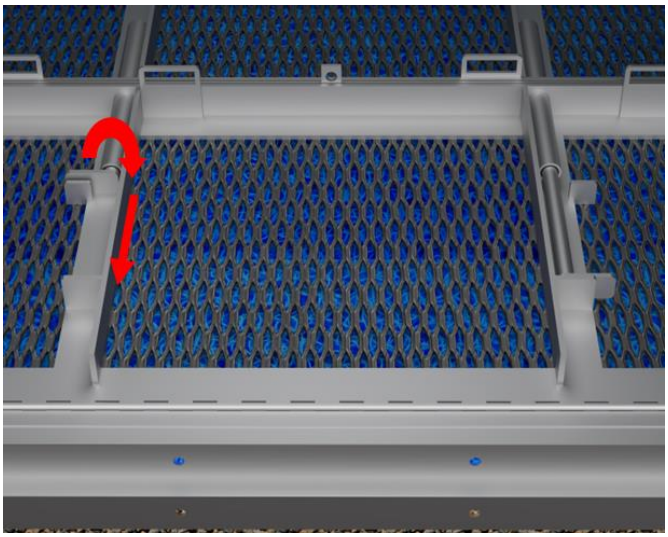
## MEDIA REPLACEMENT INSTRUCTIONS

As with all media filter systems, at some point the filtration media will need to be replaced, either due to physical clogging or sorptive exhaustion (for dissolved pollutants) of the media's ion exchange capacity (to remove dissolved metals and phosphorous). It is recommended that filtration media is replaced at the 5-year mark, or sooner based on site-specific conditions and pollutant loading. In the event that the filtration media requires replacement, contact one of Contech's Maintenance Team members at https://www.conteches.com/maintenance to order new filtration media. The quantity of media needed can be determined by providing the model number. Media will be provided in super sacks for easy installation. Each sack will weigh between 1,000 and 2,000 lbs. Filtration media replacement can be done following the steps below:



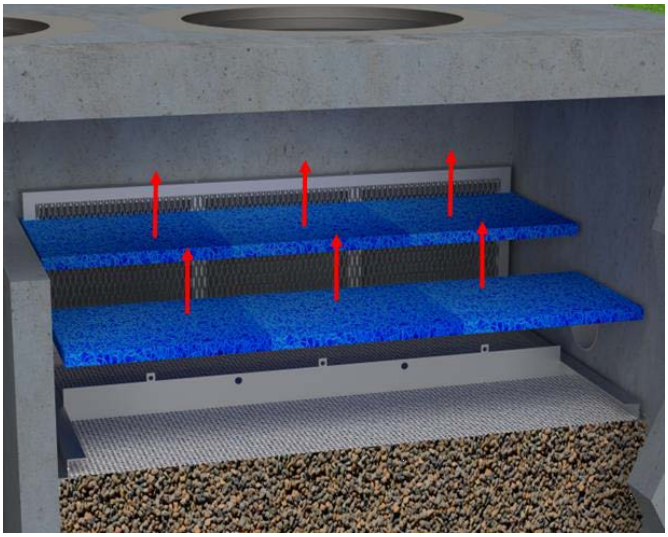
### 1. PREPARE FOR VAULT ENTRY

Remove all access hardware. Following rules for confined space entry, use a gas meter to detect the presence of any hazardous gases. If hazardous gases are present, do not enter the vault. Following appropriate confined space procedures take steps, such as utilizing a venting system, to address the hazard. Once it is determined to be safe, enter utilizing appropriate entry equipment such as a ladder and tripod with harness.



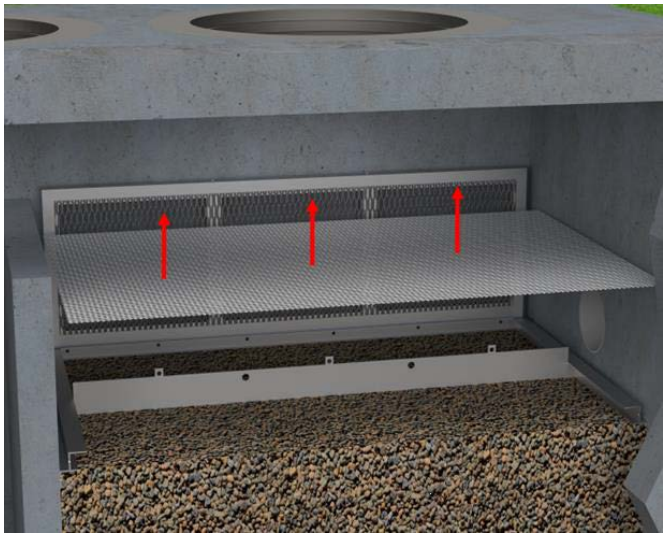
### 2. UNLOCK AND OPEN SCREENS

Depending upon the configuration of the Water Polisher, screens may have a number of hinged lids depending on the model size. Units are designed with hinges and locking mechanisms along the sidewall of the structure which can be unlocked from the finish surface with an extension rod. The length of this rod is limited and, for deeper installations, entry may be required to unlock and open the lids. Chain locks on the wall will hold lids in the open position during maintenance.



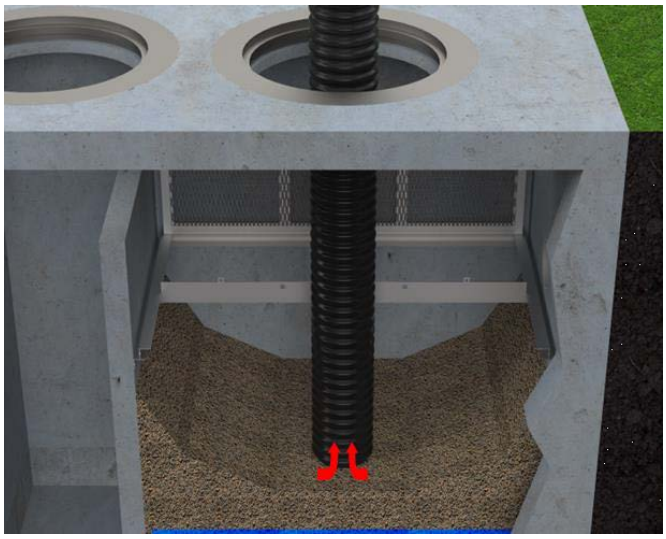
### 3. REMOVE AND WASH UPPER MATALA

Once the screen lids are opened, remove the upper matala sheet panels. Pressure wash the matala sheets and set aside for reinstallation.



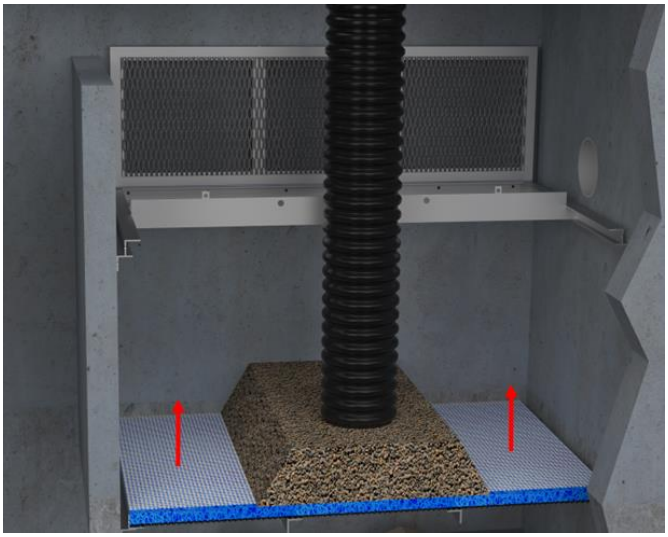
### 4. REMOVE UPPER NETTING

After removing the matala, remove the upper netting and set aside for reinstallation.



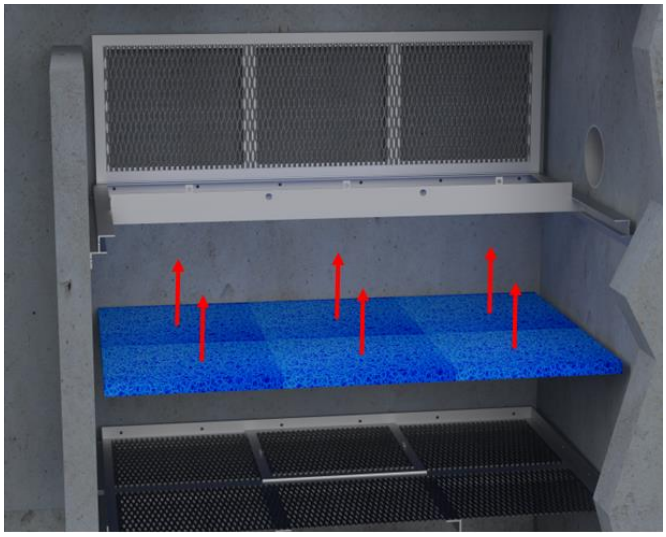
### 5. REMOVE FILTRATION MEDIA

Insert the vacuum hose extension down into the screens for removal of debris and media. If the media is impacted, utilize the pressure washer to help break up the filter media for easier removal.



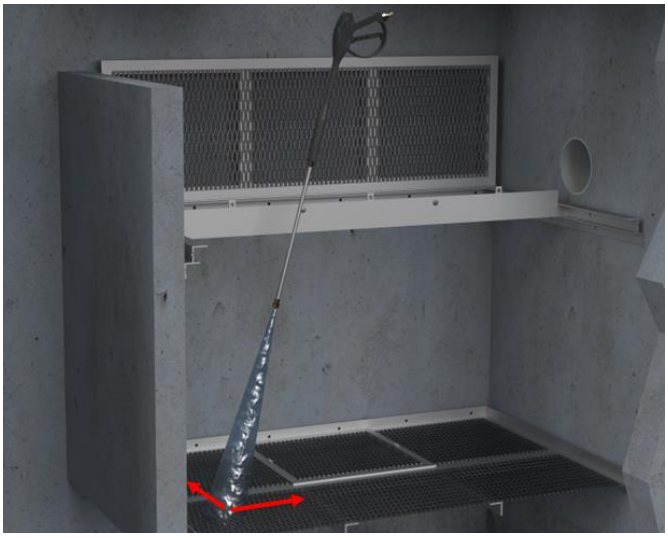
### 6. REMOVE LOWER NETTING

When most of the media has been vacuumed out, remove the lower netting and set it aside for reinstallation. DO NOT vacuum up the netting.



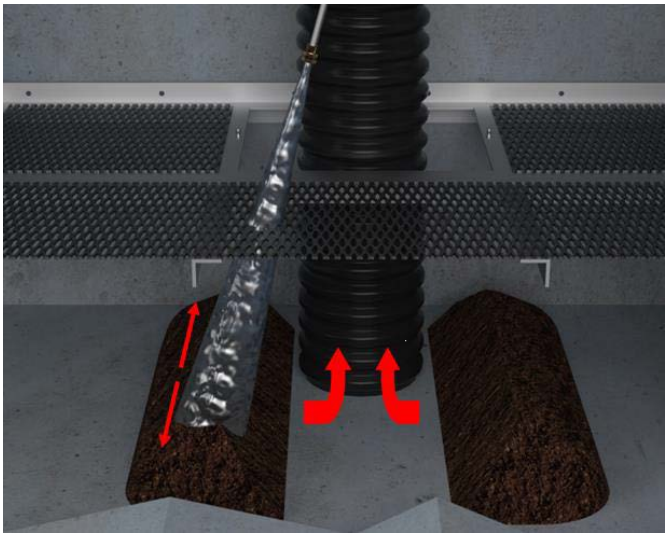
### 7. REMOVE AND WASH LOWER MATALA

Remove the lower matala sheet panels. Pressure wash the matala sheets and set aside for reinstallation.



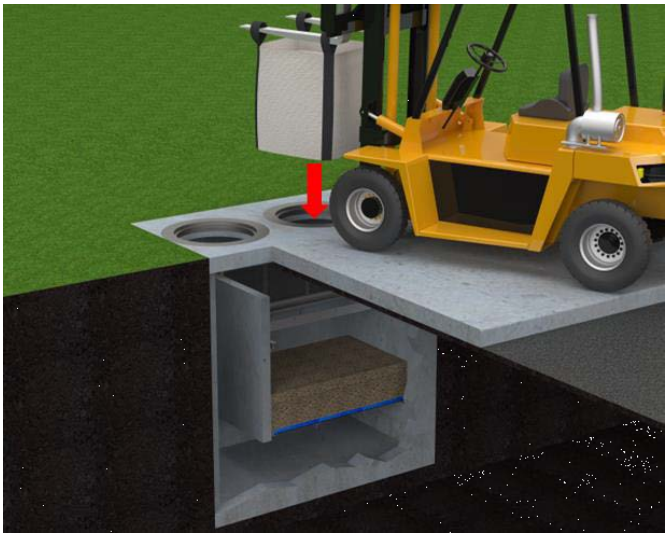
### 8. CLEAN SCREENS

All debris should be removed with the vacuum hose and a pressure washer should be used to spray down and remove all debris on the bottom and top screens. Ensure that all holes within the screen are cleared of debris.



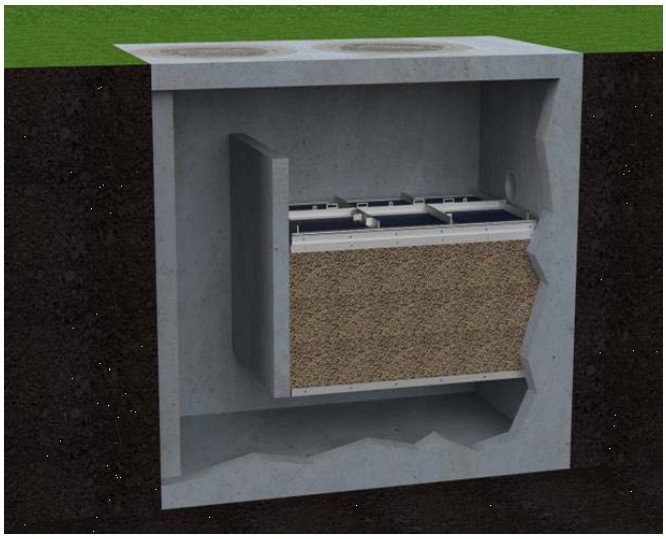
### 9. CLEAN SUMP

A removeable access panel is located on the bottom screen deck. Remove the panel to access the sump below with the vacuum hose. The filtration chamber should be power washed and vacuumed clean before replacing the lower screen access panel.



### 10. REFILL MEDIA CAGE

Ensure that the chamber is fully cleaned prior to installation of new media. Reinstall the cleaned lower matala sheet panels and netting. A lifting apparatus (forklift, backhoe, boom truck, or other) is recommended to position the super sack over the media cages. Add media in lifts and rake to ensure an even surface. Once filled reinstall the cleaned upper matala sheet panels.



### 11. FINISH MAINTENANCE

When maintenance is complete, close and latch the top screen lids, replace the access hardware, and remove all traffic controls.

All removed debris and pollutants shall be disposed of following local and state requirements. Disposal requirements for recovered pollutants may vary depending on local guidelines.

In the case of damaged components, replacement parts can be ordered from the manufacturer.

**NOTES**

**NOTES**

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# Inspection Report
# Water Polisher

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

Inspector Name _____ Date ___/___/___ Time _____ AM / PM

| For Office Use Only |
|---|
| (Reviewed By) |
| (Date) |
| Office personnel to complete section to the left. |

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

## Inspection Checklist

Size (4x8, 8x12, etc.): _____

| **Structural Integrity:** | **Yes** | **No** | **Comments** |
|---|---|---|---|
| Damage to filtration chamber access cover(s) or cannot be opened using normal lifting pressure? | | | |
| Damage to the pretreatment chamber access cover or cannot be opened using normal lifting pressure? | | | |
| Does the WP unit show signs of structural deterioration (cracks in the wall, damage to frame)? | | | |
| Is the inlet or outlet pipe damaged or otherwise not functioning properly? | | | |
| **Working Condition:** | | | |
| Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit? | | | |
| Is there standing water in inappropriate areas after a dry period? | | | |
| Is the sump at or above its sediment storage capacity? | | | |
| Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe? If yes, describe in the comments section. Note depth of accumulation in in pretreatment chamber. | | | Depth: |
| Does the depth of sediment/trash/debris suggest a blockage of the filtration media? If yes, describe in the comments section. Note depth of accumulation in in sump chamber. | | | Depth: |
| Any signs of improper functioning in the filtration chamber? Note issues in comments section. | | | |
| **Other Inspection Items:** | | | |
| Is there an accumulation of sediment/trash/debris on top of the media cage(s)? | | | |
| Is there an excessive quantity of floatable debris in the pretreatment chamber? | | | |
| Is there a septic or foul odor coming from inside the system? | | | |

| **Waste:** | **Yes** | **No** |
|---|---|---|
| Sediment / Silt / Clay | | |
| Trash / Bags / Bottles | | |
| Green Waste / Leaves / Foliage | | |

| **Recommended Maintenance** | |
|---|---|
| No Cleaning Needed | |
| Schedule Maintenance as Planned | |
| Needs Immediate Maintenance | |

Additional Notes: _____

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ENGINEERED SOLUTIONS

# Cleaning and Maintenance Report
# Water Polisher

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

| For Office Use Only |
|---|
| (Reviewed By) |
| (Date) |
| Office personnel to complete section to the left. |

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

| Site Map # | GPS Coordinates of Insert | Manufacturer / Description / Sizing | Trash Accumulation | Foliage Accumulation | Sediment Accumulation | Total Debris Accumulation | Condition of Media 25/50/75/100 (will be changed @ 75%) | Operational Per Manufactures' Specifications (If not, why?) |
|---|---|---|---|---|---|---|---|---|
| | Lat:<br>Long: | WP Pretreatment Chamber | | | | | | |
| | | Media Condition | | | | | | |
| | | Filtration Chamber Condition | | | | | | |
| | | Inlet and Outlet Pipe Condition | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

Comments:

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## SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

Water Polisher OM Manual11/24